

## CLAIMS

1. Continuous winding machine for web materials, in particular lightweight netting, such as non-woven materials, which is essentially constituted by a frame (1), on which is mounted a device (2) for winding a reel to be wound (3A, 3B), also mounted on said frame (1), this winding device (2) being essentially constituted by two independent drive rolls (4 and 5) coacting with a reel to be wound (3A, 3B), movable between a beginning winding position and an end winding position by means of movable carriages (6), connected to linear actuators (7) and guided on the frame (1), characterized in that least one of the drive rolls of the winding device (2) is in contact with the reel (3A, 3B) from the beginning of the preparation phase of a new reel (3A) to total stoppage of the completed reel (3B), one (4) of the drive rolls being in contact with the reel soon after the beginning of the formation of this latter (3A) and until total stoppage of the completed reel (3B) and being provided with a means (8) for continuous application against the reel and for continuous movement with the reel, vertically and horizontally, comprising a vertically movable carriage (11) guided on a frame (12) for horizontal movement parallel to the movement of the reel (3A, 3B), the other drive roll (5) being mounted on a device (9) comprising a means for adjusting the force of application against the reel (3A) and being in contact with the reel from the beginning of the formation of this latter (3A) to the time of its disengagement (3B), before connecting a new reel.

2. Machine according to claim 1, characterized in that the means (8) for continuous application of the drive roll (4) against the reel (3A, 3B) is moreover provided with pivotal levers (10) for supporting the ends of the drive  
5 roll (4) mounted on the vertically movable carriage (11).

3. Machine according to claim 2, characterized in that the pivotal levers (10) are connected, at the end opposite that for mounting the drive roll (4), to a balancing  
10 counterweight (10') and are actuated pivotally by means of a jack (13).

4. Machine according to claim 2, characterized in that the vertically movable carriage (11) is guided in vertical  
15 movement on the horizontally movable carriage (12) by guidance and movement means (11') such as mechanical, hydraulic or pneumatic linear actuators.

5. Machine according to claim 2, characterized in that  
20 the movable frame (12) for supporting the vertically movable carriage (11) of the drive roll (4) is guided in horizontal movement on rails (12') of the frame (1) and is driven in this movement by means either of a motor reducer assembly engaging with a rack parallel to the guide rail  
25 (12'), or by means of an electromechanical, hydraulic or pneumatic linear actuator.

6. Machine according to claim 1, characterized in that the drive roll (5) has an axis substantially aligned in the  
30 same plane as that of the winding core (3') of the reel to be wound (3A, 3B) and is mounted on a device (9) for adjusting the force, which is essentially constituted by a

movable carriage (14) guided on the frame (1) with the possibility of reciprocal movement by means of at least one jack (15) of regulated pressure, whose movement is controlled by means of a control computer of the winding  
5 machine.

7. Machine according to claims 3 and 6, characterized in that the jack or jacks (13) for pivotally actuating the drive roll (4) and the jack or jacks (15) for moving the  
10 movable carriage (14) carrying the drive roll (5) are connected group-wise each dedicated to a drive roll and to a means for regulating the programmable pressure as a function of the selected winding regimes and taking account of the material to be wound and the dimensions of the reel  
15 (3A, 3B), these pressure regulating means being themselves controlled by means of a programmable control computer of the winding machine.

8. Machine according to claims 2, 4 and 5 to 6,  
20 characterized in that the movements of the vertically movable carriage (11) of the drive roll (4), of the movable carriage (12) for horizontal movement of the vertically movable carriage (11) of the movable carriage (14) for supporting the drive roll (5) are controlled by means of  
25 position detectors coacting directly with the movement means for these different carriages and chasses.

9. Machine according to claim 1, characterized in that it is provided moreover, adjacent the device (9) for  
30 regulating the force of application bearing the drive roll (5), with a connection assembly (16) and a means (17) for supplying and emplacing a new winding core.

10. Machine according to claim 9, characterized in that the means (17) for supplying and for emplacing a new winding core (3') is present in the form of a pivotal cradle formed by two elbowed arms (19) controlled in synchronism each by a jack (20) and extending on opposite sides of a table (21) for preliminary receipt of and holding in standby of empty winding cores (3').

11. Machine according to claim 10, characterized in that each elbowed arm (19) is pivotally mounted about an axle (22) on the frame (1) of the winding machine and is provided on the one hand with a wing (23) for connection to the corresponding jack (20) and on the other hand with a wing (24) having a support surface (24') for an empty winding core (3') and extending, in the standby position before emplacement of a new core (3'), parallel to and above the table (21) for preliminarily receiving and holding in standby empty winding cores (3').

12. Machine according to claim 11, characterized in that the surface (24') of the wing (24) is delimited, at its end turned toward the movable carriages (6) for supporting reels to be wound (3A, 3B), by a bearing (241') for receiving the axle of the core (3') and, on the side opposite this bearing (241'), by an abutment (242') prolonged, externally of the surface (24'), by an inclined plane forming a stop for the axle of a new core (3') located on the preliminary holding table (21).

13. Machine according to any one of claims 10 to 12, characterized in that the preliminary holding table (21)

has a reception surface for the axles of the new cores (3') slightly inclined relative to the horizontal, in the direction of the movable carriages (6) for supporting the reels to be wound (3A, 3B) and delimited in this direction  
5 by a stop abutment (21'), and at its rear end relative to this direction, an abutment (21'') inclined relative to the vertical and forming a stop for the arrival of new empty cores (3').

10 14. Winding process with regulation of the force of application of the winding rolls (4 and 5) on a reel (3A, 3B) on a winding machine, according to any one of claims 1 to 13, characterized in that it consists essentially,  
15 during different phases of forming the reel, in applying successive and/or simultaneously said drive rolls (4 and 5) with a regulated force of application against the reel (3A, 3B), with relative movement of said drive rolls (4 and 5) relative to the reel by means of support means using guiding and moving devices, as well as devices for  
20 application of said drive rolls (4 and 5) against the reel (3A, 3B).